Space Weather Forecast

Issued on Wednesday, 05 January 2022 at 00:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of G1/Minor geomagnetic storms day 4 (8th)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low over the past 24 hours, with only B-flares observed. There are two sunspot regions on the visible disc. These are both small and simple regions, located in the southeast quadrant, although the spot closest to the limb is currently difficult to assess due to its location. No Earth-directed coronal mass ejections (CMEs) have been observed in the available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were initially elevated at around 520k m/s before declining to near background at 390-420 km/s. The strength of the magnetic field carried by the wind remained weak, with no notable deflections in the north-south direction. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Very Low solar activity is expected, with a chance of increasing to Low due to any Common class flares from either of the sunspots on the disc. Through day 3 and into day 4 (7th and 8th), the return of two old sunspots from the previous rotation will potentially increase activity bringing a very slight chance of Moderate flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Solar winds are expected to be easing to background, and then persisting at this level until the arrival of any fast wind from coronal hole 43 occurs on day 4 (8th). Mainly Quiet geomagnetic activity is expected, increasing to Unsettled to Active with a slight chance of G1/Minor storm intervals on day 4 (8th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	2	2	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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